

REMARKS/ARGUMENTS

Claims 1 and 3-7 are active in this application, claims 2 and 8 having been cancelled. Claim 1 has been amended to correct the reference to polymer block (B) as recommended by the Examiner. As this does not raise a new issue requiring further consideration or search, entry of the correction is respectfully requested. No new matter has been added by these amendments.

The present invention relates to a polymer composition containing an addition polymerization-based block copolymer (a), an acrylic resin (b), and a softener (c), wherein the addition polymerization-based block copolymer (a) has a weight average molecular weight of 30000 to 200000 and is at least one selected from block copolymers comprising at least one polymer block A and at least one polymer block B, and hydrogenated products of the block copolymers; the polymer block A comprises mainly an aromatic vinyl compound unit containing at least 1% by mass of an alkylstyrene-derived structural unit (I) in which at least one alkyl group having 1 to 8 carbon atoms is bound directly to a benzene ring; the polymer block B comprises a conjugated diene compound unit; and the components of the polymer composition are present in respective proportions (by mass) so that the following relationships (1) and (2) hold:

$$0.05 \leq W_b/W_a \leq 2 \quad (1)$$

$$0 \leq W_c/(W_a+W_b+W_c) \leq 0.5 \quad (2)$$

where W_a , W_b , and W_c are the amounts (by mass) of the components of the polymer composition: the addition polymerization-based block copolymer (a), the acrylic resin (b) and the softener (c), respectively, wherein the polymer composition has a sea-island morphology; wherein the acrylic resin (b) is a homopolymer of methyl methacrylate or a copolymer of methyl methacrylate and one or more copolymerizable monomers selected from the group

consisting of acrylic acid, metal salts of acrylic acid, acrylic acid esters, methacrylic acid, metal salts of methacrylic acid, methacrylic acid esters, vinyl acetate, aromatic vinyl compounds and maleimide compounds; and wherein the polymer composition, when formed into a 2mm thick sheet-shaped article and tested for the Taber abrasion according to JIS K 6264, gives a Taber abrasion of 100mm³ or less, the test conducted by abrading the sheet with an H-22 abrasion disk at 1000rpm while applying a 1kg load. Applicants have found that by requiring their polymer compositions to meet the requirements of the present claims, namely with respect to the use of an alkylstyrene derived structural unit where the alkyl group is directly bound to the benzene ring, the ratio of amount of a block copolymer (a), the amount of an acrylic resin (b), and the amount of softener (c), and by requiring that the composition have a sea-island morphology, the resulting compositions have significantly improved scratch resistance and abrasion resistance.

The present invention provides the polymer composition with improved scratch resistance and abrasion resistance by combining a block copolymer, an acrylic resin and a softener in specific portions to provide a specific phase structure.

The claims stand rejected under 35 U.S.C. 103 over Toshinori, optionally in view of Dekking. The Examiner's rejection is clearly based on a hindsight reconstruction of the present invention. In particular, Toshinori discloses a resin composition containing a block copolymer and a thermoplastic resin, preferably combined in a proportion of 5:95 to 95:5. Further, Toshinori's composition can contain a softener, preferably in an amount of 40 to 80 parts by weight per 100 parts by weight of the total amount of block copolymer and thermoplastic resin (see pages 22-23 of the English translation of Toshinori). However, for the Examiner to suggest that one of ordinary skill would somehow be led by the teachings of Toshinori to choose to combine an addition polymerization based block copolymer with an acrylic resin and a softener; **and** to somehow choose the block copolymer to have the

necessary block A comprising mainly an aromatic vinyl compound unit containing at least 1% by mass of an alkylstyrene-derived structural unit having at least one alkyl group having 1-8 carbon atoms bound directly to the benzene ring, **and** to choose the acrylic resin to be a homopolymer of methyl methacrylate or a copolymer of methyl methacrylate and one or more copolymerizable monomers selected from the group consisting of acrylic acid, metal salts of acrylic acid, acrylic acid esters, methacrylic acid, metal salts of methacrylic acid, methacrylic acid esters, vinyl acetate, aromatic vinyl compounds and maleimide compounds; as required in the present invention; **and** to choose the relative amounts of these components and the softener to meet the relationships (1) and (2) of the present claims; is stretching the teachings of Toshinori beyond recognition.

Toshinori's listing of possible thermoplastic resins covers over 3 pages of text, and a vast array of polymers. Further, none of the preferred thermoplastic resins taught at page 22 of the English translation are acrylic based resins, nor are any of the working examples.

Further, even if one of ordinary skill were to somehow arrive at this combination of the three components, there could be ABSOLUTELY no expectation that the resulting composition would have improved transparency, scratch resistance and abrasion resistance. In fact, Toshinori says NOTHING about those properties, so one of ordinary skill in the art could have no way of expecting that choosing any combination of components from Toshinori would have any effect on those properties at all!

The Examiner has attempted to overcome these deficiencies of Toshinori by the use of Dekking. The Examiner relies on the teaching of Dekking at column 1, lines 10-15 which reads as follows:

2. Description of the Prior Art

It is well known in the plastic art to use inexpensive particulate fillers to extend relatively expensive polymers and reduce their overall material costs (U.S. Pat. No. 3,441,523). Certain fillers provide additional properties such as mild reinforcing, better abrasion resistance, and increased hardness. Recent developments in filler technology have produced substantial

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Thus, Dekking teaches that it is known in the plastic art to use inexpensive particulate fillers to extend polymers and reduce material costs, and that certain of these fillers provide reinforcing, better abrasion resistance and increased hardness. That is all well and good, except that it has absolutely nothing to do with how Applicants achieve the improvements in abrasion and scratch resistance seen in the present invention! The present invention uses a particular combination of a block copolymer, an acrylic resin and a softener to achieve a specific sea-island phase structure and result in improved abrasion and scratch resistance, and improved transparency. The Examiner is requested to note the lack of a need for filler in the present invention composition!

The combination of Dekking with Toshinori cannot arrive at the present invention. Dekking's only teaching is to improve abrasion resistance by adding an inorganic particulate filler. That is completely different from the present invention. If the Examiner is basing this combination rejection on Dekking teaching that it is desirable to improve abrasion resistance in polymer compositions, this still does not provide any guidance to one of ordinary skill in the art on HOW to modify Toshinori, or WHICH components to pick from Toshinori, or WHAT would be the properties of the resulting composition if they did so! The only way taught by Dekking to improve abrasion resistance is to add an inorganic particulate filler to the composition. That is NOT the present invention and cannot result in making the present invention obvious. Accordingly, the rejection cannot stand and should be withdrawn.

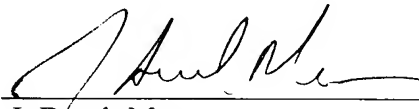
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Applicants submit that the application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
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Norman F. Oblon

A handwritten signature in black ink, appearing to read "J. Derek Mason", is written over a horizontal line.

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